Siberia Telecommunications Market Report

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Brief Market Overview

The Russian Ministry of Information and Communications reported that in 2004 the volume of investments in Russian telecommunications increased by 180%, while the market itself grew by more than 43% (and 38% in the first half of 2005). Although the vast Siberian territory may at first glance seem daunting for conducting a telecom business, about 30 large Siberian cities, mostly situated along the Trans-Siberian Railroad and comprising 70% of the population, are fueling demand. A significant number of Siberia-based, large export-oriented companies (Russia's main sources for nickel, copper, aluminum and forestry), together with growing chemistry, petrochemistry, mechanical engineering, and electronics sectors, constitute an industrial client base in need of better, faster, and more reliable telecom services. In addition, the transportation sector and the region's geographic location as a transit territory connecting European with Central and Southeast Asian markets are strong drivers in the development of Siberian telecommunications.

The strong Russian economic growth of recent years drives up demand and further contributes to the expansion of Siberian telecommunications. Large national operators, like VympelCom, Mobile Telesystems, Equant, Golden Telecom, TransTelecom, and Megaphone are all active in the Siberian market. According to an industry expert, Siberian telecom market will maintain an annualized growth of 10 to 12 percent.

Current telecom growth is mostly driven by the strong economic performance of cities like Novosibirsk (over 1.4 million inhabitants), Omsk (1.1 million), Krasnoyarsk (875,000), Barnaul (650,000), Tomsk (600,000), Irkutsk (580,000), Novokuznetsk (550,000) and Kemerovo (500,000). However, with low fixed-line penetration rates (20.1 per 100 inhabitants) and incomplete digitization of exchanges (49 percent are currently digitized), much remains to be done to modernize the network and meet current demand, thus significant investments in telecom infrastructure are needed.

General Development of Siberian Telecommunications

The total size of the telecom market Siberia in 2003 was estimated at RUR29.24 billion (about $1 billion), including RUR15 billion for fixed lines, which constitutes 7.31 percent of the Russian market, and posted 42 percent growth from 2002. According to current estimates, the telecom market size in 2006 may reach RUR 35 billion, a 70 percent increase from 2002.

Sibirtelecom, JSC (www.sibirtelecom.ru), is one of the largest telecommunications companies in Russia and the primary operator of fixed lines in Siberia, possessing 89 percent of market and 69 percent share in total regional telecom market. It conducts large-scale operations in all Siberian regions except the Tuva Republic. The main long-distance provider in Siberia is national operator Rostelecom (www.rt.ru/en).

Svyazinvest (http://eng.sinvest.ru), one of the largest telecom holding companies in the world, is the main stockholder of Sibirtelecom (38 percent of shares). The capacity of Sibirtelecom's automatic telephone exchanges is over 3.9 million telephone numbers, including over 3.6 million lines currently

in use. The share of digital telephone exchanges is 49 percent. The length of inter-regional telephone lines exceeds 28,000 kilometers. Sibirtelecom's revenues in 2004 totaled RUR 19 billion, a 21.7 percent increase from 2003. Its revenues from fixed line services constituted approximately 70 percent, or RUR 13.3 billion. Main subcomponents in the sector are international (39.4 percent of revenues) and inter-city (38.6 percent) phone calls.

In 2004, Sibirtelecom's investments totaled RUR 5.6 billion, 63 percent of which was invested in developing fixed lines, 17 percent in intercity and international communication, and 4 percent in new services. In 2005, investment amount is expected to reach RUR 6.1 billion, half of which is being invested in fixed lines and digitization of exchanges. The total number of new lines in 2005 will exceed 400,000, and RUR 1 billion will be invested in the development of intercity and international communication systems. The company also plans to invest over RUR 1 billion in the development of new services and information technologies. By 2006, SibirTelecom hopes to control 80% of local telephony and be the largest ISP, offering over 60% of Internet connectivity in the market.

Mobile Communication Services

According to Moscow-based telecom consulting agency, iKS-Consulting (www.iks-consulting.ru), more than half of the population of the Siberian Federal District is already using mobile communication services.

There are five main mobile players on the Siberian market: VympelCom (BeeLine TM), MTS, Megaphon, Tele-2, and SibirTelecom. Correspondingly, in June 2005, the Siberian mobile market was divided among the main players in the following proportion:

VympelCom – 3,482,000 subscribers, 40.7% share;
MTS – 2,983,000 subscribers, 34.8%;
Megaphon – 278,300 subscribers, 3.25%;
Tele-2 – 683,600 subscribers, 8%;
SibirTelecom – 1,132,300 subscribers, 13.2%.

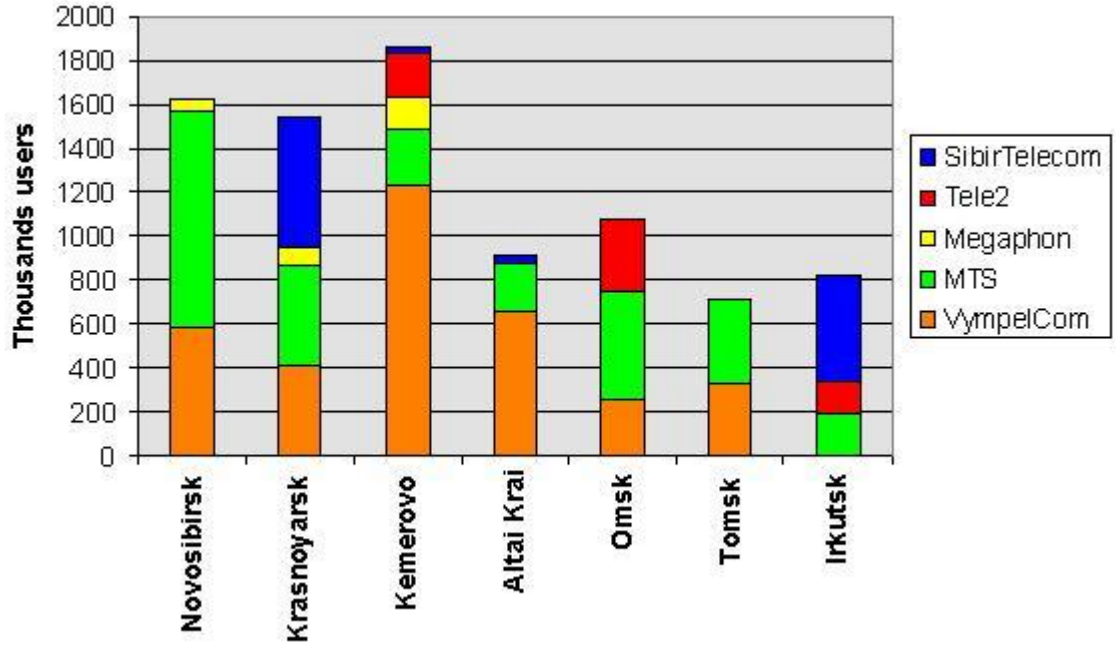
MTS and BeeLine are the leaders and main market competitors. Megaphon market presence, although not exceeding 5%, has shown rapid subscriber growth due to the company's dedicated efforts in modernizing existing networks and developing new ones across Siberia. In summer 2005, Megaphon took a $541 million revolving credit to develop its network infrastructure (the unsecured credit line opened for 3 years period by Citibank, N.A. London and ING Bank N.V., provides this cell operator with an opportunity to take up to $220 million at a time); $60 million from this sum will be spent for Siberia networks development. Furthermore, Megaphon reached an agreement with the same group of banks on a $321.5 million, medium-term (6 years) line of credit. The credit, assigned for purchase of Nokia equipment, was assured by the Finnish Export Credit Agency - Finnvera. In June 2005, Megaphon established regional presence in Tomsk region, and is currently working on entering Altai and Omsk regions.

Tele-2-Russia, affiliate of European telecommunications holding Tele-2, is still new to Siberia (Tele-2's first Russian mobile network was launched in Irkutsk on April 1, 2003), but is already aggressively operating in Omsk, Kemerovo, and Irkutsk regions, offering the best cell phone prices and service rates on the market.

The market share of SibirTelecom remains relatively stable, but the company seems less aggressive in its expansion policy than other operators.

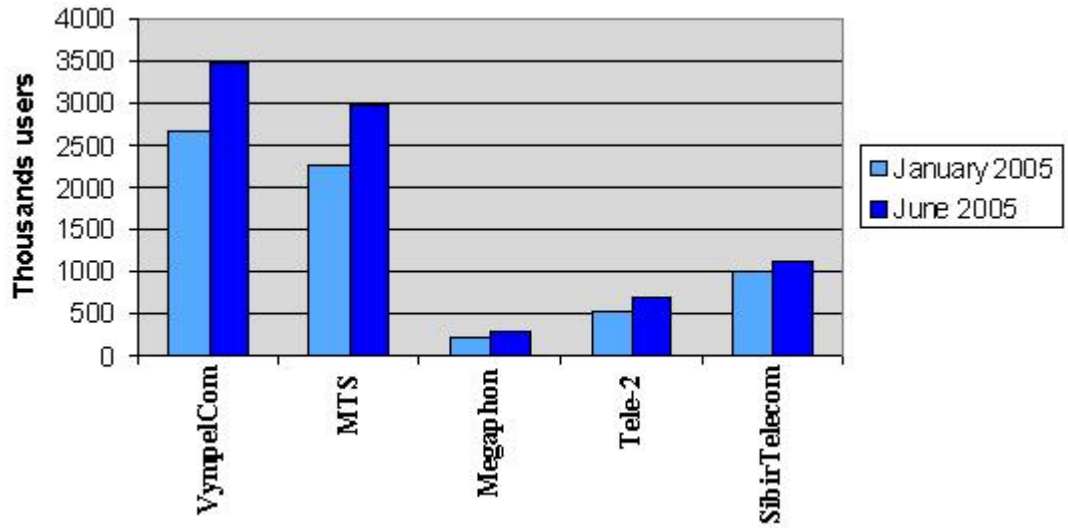
The above companies' presence in separate Siberian regions is shown on following graph:

Graph 1
Mobile service providers in Siberian regions



Siberian mobile penetration levels reached 53% in September 2005, still lower than the Russian average of 74%, but showing great dynamism and becoming the new frontier of mobile telecom competition. For comparison, in February 2005 mobile penetration in Siberia did not exceed 37%. Russian experts forecasts that the rate of penetration in Siberia will reach 63-65% by the end of 2005. This explosive growth is well characterized by the following graph:

Graph 2
Growth of number of cell communication services subscribers in Siberia, first quarter of 2005



Source: iKS-Consulting and analytical center Expert-Sibir.

Given current mobile growth forecasts, regions with lower penetration rates like Altai Republic, Tuva, Khakassiya and Buryatiya Republics, are expected to become the next territories for regional mobile expansion.

Currently, mobile communication services are offered in all Siberian regions. The Tuva Republic (VympelCom, November 2004) and Ust-Ordynsky Buraytsky Autonomous Region (December 2004) were the latest to introduce these services.

Today the number of cellular users in Siberia is approximately 11 million, or about 10% of total number of subscribers in Russia. Novosibirsk-based *Expert-Sibir* business journal estimates the following territorial distribution of mobile subscribers among the main regions of Siberia:

Table 3
Siberian Mobile Subscribers by Regions

Region	Share, %
Novosibirsk region	21 %
Krasnoyarsk Krai	19 %
Kemerovo region	19 %
Altai Kari	10 %
Omsk region	9 %
Tomsk region	9 %
Irkutsk region	8 %
Republic of Buryatiya	2 %
Republic of Khakasiya	2 %
Republic of Altai	1 %
Total 100%, 11 million users	

All operators provide the same set of services—communication in GSM 900/1800 standards, WAP, SMS, GPRS, voicemail, national and international roaming services. All popular types of mobile equipment are supported, and such models as Siemens, Nokia, Motorola, Sony (-Ericsson), LG, and Samsung are actively sold in Siberian cities. Pre-paid services, contracts (sometimes corporate, providing special discounts) and phone cards are commonly utilized.

The average per user revenue received by Russian mobile providers varies from $2.4 to $3.5 a month. Operators insist that communication tariffs offered to subscribers have already reached the minimum level of profitability and will hardly be subject to more reductions in the future.

Several regional operators also provide cell communication for relatively small number of users in NMT-450 standard. Sotel network (SkyLink JSC), comprising all NMT-450 providers in Russia, is currently working on developing a unified federal network with advanced IMT-MC-450 standard to replace the outdated NMT-450 networks.

Russian companies are currently increasing the range of services related to cellular communications, e.g., MMS, EDGE, and GPRS. GPRS is available to all Siberian subscribers of VympelCom and Megaphon and to most part of SibirTelecom and MTS clients and is becoming increasingly popular. Whereas in 2000, the price of a GPRS-enabled phone reached $250, and not more than 1% of subscribers used mobile Internet, at present the price of such phone is about $90-100, and the average number subscribers using GPRS services of different providers reached 5 to 8 %.

SibirTelecom plans to triple the number of GPRS users in 2005. The price for internet access through GPRS is relatively stable at a rate of 20 cents for a megabyte.

Internet Networks

In late 2004, the Internet penetration rate in Tomsk (7.1%) and Novosibirsk (6.6%) placed these regions in the top 10 Internet active regions in Russian. The number of IP addresses granted in the Siberian Federal District increased three-fold (approx. 150,000) during 2000–2004, and is poised for further growth. In December 2004, SibirTelecom, one of Russia's largest Internet providers, reported the number of Siberian accounts reaching 317,000.

Primary Internet service providers (ISPs) in Siberia are RTComm-Sibir (www.rtcomm-sibir.ru), TransTelecom (www.transtelecom.ru), and Equant (www.equant.ru). These providers target corporate clients only, and offer access to any desired carrying capacity.

RTComm-Sibir is a subsidiary of RTComm.RU company, major stockholders of which are Rostelecom, and RTC-Leasing companies. RTCComm-Sibir has regional hubs in Novosibirsk, Krasnoyarsk, and Irkutsk, and covers the entire Siberian Federal District.

Since 1997, TransTelecom has been developing a telecommunications network based on the existing infrastructure of the Russian Railroads (development of telecommunications along the TransSiberian Railroad has been one of the largest telecom projects in Russia). ZapSibTransTelecom is the regional representative company of TransTelecom in Western Siberia, and operates as well as builds additional network capacity in Omsk, Novosibirsk, Tomsk, Kemerovo, Barnaul regions and Altai Krai.

Baikal-Transtelecom (www.bttc.ru), representative of TransTelecom in eastern Siberia, provides services in Irkutsk region and Buryatia Republic, and Sib-Transtelecom, representative of TransTelecom in Central Siberia, provides services in Krasnoyarsk Region.

Currently, a modern high-speed network where ATM, SDH and DWDM technologies and newest equipment (Lucent Technologies, Alcatel, ELTECO, Siemens) are applied already covers most Russian regions, including the Siberian Federal District. Taking into account that the network has a satellite backup, the system reliability reaches 99.99%.

SibirTelecom and many other Siberian Internet providers are in the process of introducing ADSL - advanced Internet technology and equipment, which combines low cost Internet connection with desirable data transmission speeds. MPLS (Multi-Protocol Label Switching) is mostly used by private corporate networks and large companies with geographically dispersed offices.

Telecommunications Equipment

Leading equipment suppliers in the Siberian market are Alcatel, Siemens, and Ericsson. Alcatel and Siemens offer a wide range of equipment, whereas Ericsson is primarily providing equipment for cellular communications. Alcatel's sales in Russia for 2004 are estimated to be over $500 million. Alcatel is the major supplier of equipment to SibirTelecom, the largest telecom company in Siberia. According to the protocol agreement recently concluded by the companies, Alcatel will continue supplying equipment for establishing Next Generation Network (NGN) and develop the concept of implementation and provide equipment for Multiprotocol Label Switching (MPLS) and EDGE (Enhanced Data for Global Evolution, for GSM cellular networks) technologies.

In 2004, Ericsson sold equipment worth $540 million in the Russian market. The company's share in equipment purchase investments in Russian cellular infrastructure was 30 percent, as opposed to 24 percent in 2003. It should be noted that total investments in the Russian cellular infrastructure in 2004 increased by 40 percent.

The most active U.S. companies in Siberian market are Cisco Systems, Avaya, Lucent Technologies, Nortel Networks, and Motorola. Cisco Systems has a representative in Novosibirsk, and a number of regional partners distributing and/or selling equipment, such as NETA, Intech, Rotek, and Avantel. Intel has launched the Easy Access Program in Novosibirsk aimed at promoting wireless Internet access technology (Wi-Fi). A number of access points have been established throughout the city.

Chinese producers of equipment have been successfully competing with Western suppliers on the Siberian market. MegaFon purchased GSM-standard equipment for its networks in Siberia from Huawei. Another large Chinese supplier is ZTE Corporation; in 2004, Skynet network, based on ZTE equipment, was launched in Siberia.

The majority of telecom distributors in Siberia purchase equipment from the Moscow and St. Petersburg warehousing facilities of foreign suppliers.

General Telecom Trends in Siberia

Most advanced telecom technologies and means of communication are presently available in the large Siberian cities, including card phones, digital telephony, data transmission and Internet access services, high-quality cable television, cellular and trunk communication.

SibirTelecom presently develops the Wi-Fi and Wi-Max networks in the largest Siberian cities—Novosibirsk, Tomsk, Omsk, and Krasnoyarsk. In Irkutsk, for example, around 45 Wi-Fi hot-spots will be mounted in the airport, railway station, trade centers and hotels, and will made operational in 2006; total cost of installation will not exceed $70,000.

In Novosibirsk this technology is also expected to meet the high demand. Several providers, such as Avantel, Riss-Telecom, and Equant, are interested in developing Wi-Fi hot-spots. Several access points are already in operation and over 300 access points will be established within the next 1-2 years.

Wi-Max technology, providing more distant access (up to several miles), is largely unknown in Russia, and only Novosibirsk and Irkutsk citizens are expected to enjoy it in the near future.

Paging communication used to be very popular about 4-5 years ago, but as cellular services became more affordable, the pagers are almost forced out of the market and providers are gradually reducing these services.

IP-television systems may be available in Siberia in the near future. Novosibirsk-based NovoTelecom started testing an IP-television system on the base of its broadband access networks. Test broadcasting to subscribers is expected to start by the end of 2005. Initially the spectators will be offered several channels, including Music Box TV, Fashion TV, TV3, TNT, NTV, and others.

A strong recent trend noticed by Siberian Internet providers is that the market is shifting from corporate clients to private users. The share of corporate consumption of Internet traffic recently decreased from 36 to 32% and, as the fiber optic networks extend further, more and more private networks in large Siberian cities will be developed to offer high-speed services. Home networks, usually covering several buildings in large residential districts and including 10 to 300 users, provide users with high-speed Internet and access to music, movies, and games. These high-speed residential services are offered at relatively low prices; they are growing rapidly and becoming popular in most Siberian cities.

Further e-commerce development, based on modern telecommunication technologies, is expected in Siberia. In Novosibirsk alone, the volume of e-commerce transactions in 2004 was estimated at approximately $800 million.

In November 2005, Tomsk won an important federal contest and became the only Siberian region to receive the status of a **Special Technology Development Zone (Technopark)**. The premise of the Zone is to provide businesses with tax, customs, and administrative incentives in order to attract investment, spur high-tech growth and create local jobs. Among the priorities of the Tomsk Technopark is the development of new telecom technologies.

Best Prospects for U.S. Equipment

The best prospects for U.S. equipment and services are:

- Fixed line telephony equipment. Low fixed-line penetration in Siberia fosters further development of this segment
- Broadband technologies. As the regional economy grows, companies realize they need high-speed Internet communication, and such technologies may satisfy this need.
- Voice Over IP (VOIP), mobile equipment, mobile content services and software (VAS related). The total number of PC users in Siberia is still relatively low. However, this number has been dramatically growing for the past several years. New telecom technologies, such as VOIP, are getting more and more popular, as the tariffs applied are considerably lower than those of the regional telecommunication monopolists.

Specific Telecom Developments by Region

Being the largest Siberian city and the administrative center of the Siberian Federal District, **Novosibirsk** holds tremendous potential for further telecom market growth. SibirTelecom, the largest telecom service provider in Siberia, is headquartered in Novosibirsk. Up to 700,000 regional phone lines, including 500,000 in the city of Novosibirsk, are being actively used. Fixed-line penetration in the city is 34 per 100 inhabitants. All major federal telecommunication companies, such as RosteTelecom, GoldenTelecom, TransTelecom, have established hubs and offices in the city. The large and most active Siberian distributors of foreign-made telecom equipment are mostly headquartered in Novosibirsk.

Tomsk region, with TomskTelecom as the main telephone communication provider, is in the top five in Russia and number one in Siberia by the level of digitization; all new connections presently put into operation are based on modern digital switching systems. Tomsk is a student city, where every 4th inhabitant is related to higher education and science, and IT science and telecommunications technologies have been traditionally the region's competitive advantages. Both the level of computer literacy and numbers of PC users are relatively high. Correspondingly, PC networks and Internet related services are especially developed in Tomsk and adjacent Seversk and the number of Internet users doubles each year. In addition to numerous corporate networks, there are several dozen interconnected private ("home") computer networks. The so called Magistral (trunk line) Internet project has been completed in Tomsk, resulting in high-speed optical fiber line covering all city districts and making Internet available to any home or business. All "internal" (inside the city), high-speed traffic is provided free of charge, the users usually pay only for the information downloaded from the outside plus a small license fee.

In June 2005, the Administration of Tomsk region and AFK "Systema," which currently controls a group of leading companies in telecommunications and high-tech, signed a collaboration agreement, according to which the parties will jointly establish and develop a IT-park called "ITP Tomsk-Systema." The priority sectors that the technopark aims to develop are IT and telecom, including the further development of regional telecom infrastructure based on the teleport of Tomsk State University (integrated unit providing complex videoconference, TV-broadcasting, IP-telephony and telemedicine services), together with electronics, and nanotechnologies. AFK "Systema" is going to invest in equipment, construction, and telecommunications of the IT-park. Furthermore, in September 2005 the Tomsk Deputy Governor for economic policy and investment briefed representatives of 20 western IT companies (HP, IBM, Oracle, Cisco and others) in order to entice their involvement in the **Special Economic Zone**.

Kemerovo, a densely populated and compact territory in southern Siberia, is another region where advanced telecommunication services and technologies are present. High-speed Internet access, IP-telephony, ADSL and ISDN services are provided, and a pilot telemedicine project has been realized. Kemerovo's branch of SibirTelecom JSC is one of the first in Siberia to perform complete digitalization of the region, with around 3 million population in Kuzbass, telephone networks capacity has reached 625,000 and another 100,000 will be switched on by the end of 2005. In 2006, SibirTelecom plans to launch a broadband Internet access terminal for 27,000 connections in Novokuznetsk City. In 2005 the local company branch invested more than $40 million in regional telecommunication networks construction and development. Besides, Kuzbass is among the regions where economic growth has outstripped telecom development, and unmet demand makes it one of the most promising regional markets in Russia. A project of equipping the city public transportation with state-of-the-art GPS (global positioning system) was realized last year in Kemerovo City.

Major provider of telecom services in **Krasnoyarsk** region is SibirTelecom, with up to 50 percent of the market share. SibChallenge-Telecom is among other significant players. As of 2003, the company belongs to Golden Telecom. Golden Telecom, as an alternative operator in the region, has its own telecom network, including modern digital exchange with 200,000 lines capacity, and a fiber-optic network (SDH, PDH). The network is based on equipment of worldwide leading producers, such as Siemens, Alcatel, Nortel, and Lucent Technologies. Due to the vast territory of the region, not all locations have access to telecommunications services. During the next few years, SibirTelecom plans to expand and provide full regional access. Furthermore, satellite telecommunication systems and technologies are implemented in the region. Thus, multi-service satellite system developed by Syrus Systems Company was launched in 2004. The system allows access to long-distance phone communication, Internet, radio and TV broadcasting services in remote areas of the region. This successful project is a result of joint cooperation of the regional government, the Russian Broadcasting Network, and Kosmicheskaya Svyaz, Federal government-owned companies, and private investors.

Irkutsk region remains one of the less connected regions of Russia, and the Irkutsk branch of SibirTelecom plans to continue investing in the development of the regional telecommunications infrastructure. In 2004, the volume of investments was around $15 million, mostly allocated into developing fixed lines and regular telephony. Connecting rural areas remains a top regional priority, taking into account that the southern part of Irkutsk is industrialized while northern territories are scarcely populated. Total investment for infrastructure purposes in 2005 is expected to exceed $21 million. Regional mobile service provider BaikalWestCom plans implementation of CDMA2000 and to leap frog into 3G communication systems for higher speed of data transmission.
By the end of 2005, new systems are expected to be introduced in Angarsk, Usolie-Sibirskoe, and Shelehov Cities. Mobile services are also being made available to remote locations; TELE-2 recently financed the construction of a new retranslating tower covering a large territory on the Baikal Lake shore.

Over 30 percent of **Omsk** region's 2 million residents live in the countryside. Omsk's local SibirTelecom branch is steadily installing digital exchanges in villages and small settlements. Within the framework of the Federal program on "Development of National Network Computer Telecommunications for Science," fiber-optic fragment of the network has been developed in the city of Omsk.

Starting in August 2005, SibirTelecom's branch in **Altai** region began to provide Internet access service based on ADSL technology. It's a pilot project, and eventually, Sibirtelecom will offer the service throughout the entire Siberian Federal District. Implementation of the project will make Internet services more affordable, reliable, and faster for corporate and residential clients alike. Out of 650,000 people living in Barnaul, only 35,000 are active Internet users. As the numbers indicate, there is a tremendous potential for subscriber growth. AltaiTelecom is presently installing new Siemens telephone digital switching system.

Opportunity for Profile Building/Upcoming Trade Shows and Events

Trade shows related to the telecommunication industry provide most direct opportunities to learn more about the market, its current trends and major players across the Siberian regions. Such shows are conducted in each region. The largest specialized show in Siberia, SibTelecom, is annually held Novosibirsk:

Region/ Exhibition Organizer	Trade Show	Website	Month
Novosibirsk/ Siberian Fair	SibTelecom	www.sibfair.ru/en/exhibition.php?id=462	September
Tomsk/Technopark	Telecom and means of communication	www.t-park.ru	June
Krasnoyarsk	Communications-Infocom	www.krasfair.ru/eng/calend/calend2006-2.shtml	November
Irkutsk/ SibExpoCenter	SibInfoCom	www.sibexpo.ru	October
Omsk/InterSib	SvyazInfo	www.intersib.ru/?gid=131&pid=2	February
Kemerovo/ ExpoSib	Expo-Svyaz	www.exposib.ru	March
Novokuznetsk	Kuzbass Fair	www.kuzbass-fair.ru	May

Useful links

I. Service Providers

1. SibirTelecom (www.sibirtelecom.ru/english/company/index.php), headquartered in Novosibirsk. The company has affiliates in all Siberian regions.
2. RTComm-Sibir (www.rtcomm-sibir.ru), headquartered in Novosibirsk, covers entire Siberia.
3. West-Siberian TransTelecom (www.zsttk.ru), headquartered in Novosibirsk, covers Omsk, Kemerovo, and Altai regions.
4. Sib-TransTelecom (www.sibttk.ru), Krasnoyarsk
5. Baikal-TransTelecom (www.bttc.ru), Irkutsk
6. MTS in:
Altai (www.barnaul.mts.ru)

Irkutsk (www.irkutsk.mts.ru)
Krasnoyark (www.kras.mts.ru)
Novosibirsk (www.nsk.mts.ru)
Omsk (www.omsk.mts.ru)
Tomsk (www.tomsk.mts.ru)

7. TomskTelecom (http://telecom.tomsk.ru), Tomsk

II. Telecommunication equipment distributors

1. Intech (system integrator, www.intech-nsk.ru), Novosibirsk. Sales of equipment manufactured by: Cisco Systems, Avaya, Nortel Networks, Plantronics.
2. NETA (system integrator, www.neta.ru). Headquartered in Novosibirsk, has affiliates in Altai (www.barnaul.neta.ru), Krasnoyarsk (www.krasnoyarsk.neta.ru), Kemerovo (www.kemerovo.neta.ru), and a number of other cities.
3. Kapital-Technologia (system integrator, www.kkt.ru), Novosibirsk. Sales of equipment manufactured by: Motorola, ICOM, Siemens, ROHDE & SCHWARZ.
4. Rotek-Novosibirsk (www.nets.telecomsite.ru). Sales of equipment manufactured by: Alcatel, Cisco Systems, Lucent Technologies, ZyXel.
5. Konex (www.konex.info), Kranoyarsk - Watson, Hardlink, CNet, Pandatel, Axxessit, Nokia, Ericsson, Hitron, Cisco, 3Com, HP, GSM 900/1800 and CDMA 2000 equipment, etc.
6. Business Partner (www.bipa.ru), Irkutsk – Nortel, Ericsson equipment, communication provider services.
7. Sibit Group of Companies (www.sibit.ru), Krasnoyarsk – system integrator on Siberian and Far Eastern market, cable and telecommunication systems construction, IP-telephony. Avaya, Nortel Networsk equipment distributor.

III. Telecommunication Systems Designers/Developers:

1. Micran (www.micran.ru), Tomsk
2. S&R Institute of Semiconductors (http://orion.netlab.cctpu.edu.ru/NIIPP), Tomsk

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